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INDUSTRIAL EDUCATION

10-20-30 VISUAL COMMUNICATION

CURRICULUM
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CURRICULUM GUIDE



Alberta

EDUCATION

1976

I N D U S T R I A L E D U C A T I O N

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ALBERTA EDUCATION

1976

A C K N O W L E D G E M E N T S

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NOTE: This Curriculum Guide is a service publication only. The Senior High School Program of Studies contains the official statement concerning Senior High School Industrial Education. The information contained in the Guide is prescriptive insofar as it duplicates that contained in the Program of Studies. There are in the Guide, however, as well as content, methods of developing the concepts, suggestions for the use of teaching aids and lists of additional reference books.

NOTE:

Industrial Education 10, 20 and 30 is made up in four (4) packages according to career fields.

Teachers may select modules from a number of fields and consequently will need those packages that contain the content for the modules they plan to teach..

The packages are color-coded and contain the following career fields:

- | | | | |
|----|--|---|--------|
| A | Electricity-Electronics | - | yellow |
| B. | Materials | - | green |
| C. | Power Technology | - | blue |
| D. | Visual Communications | - | orange |
| E. | The general modules of Research, Development and Production Science will be found in each package. | | |

Study the content of the modules carefully and select those that best meet the needs of the students in the school, your own competencies and the availability of tools and equipment.

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VII. COURSE GUIDES:

- A. Electricity Electronics - yellow package
- B. Materials - green package
- C. Power Technology - blue package
- D. Visual Communications - orange package
- E. General

1. Research

2. Developmental

3. Production Service

I . I N T R O D U C T I O N

The Industrial Education 10, 20, 30 series of courses is designed to provide exploration of, and orientation to, a wide variety of career options. These courses provide guidance to students to help them select more in-depth courses for occupational preparation or simply add to their technological "know-how".

Through the program, students are able to work in an environment which is conducive to challenging their intellect and developing their talents in a number of technical and craft areas. Students become aware of the interrelationship and the dependency of one technology upon the others. They have the opportunity to develop an understanding of the principles and skills required in the various occupations. Students will have many opportunities to apply academic skills learned in other subjects to their lab work.

I I . P H I L O S O P H Y

Industrial Education adds a new dimension to the program for educating young people at the secondary school level. For many students it will open new options to help prepare them for the life ahead while enjoying their studies now. The authors of the Industrial Education curriculum recognize that the needs of society have changed, and with them the approach to knowledge acquirement. Students today must be helped to learn how to learn, to conduct inquiry, to study independently, to make choices and decisions, to use technology, and to live with change.

The Industrial Education program is concerned with career development. Because careers today do not develop along predictable lines, our education program must provide considerable flexibility so that students have an option of several career choices. This is possible for several reasons. A person who has been broadly educated is able to learn what he needs to know, within limitations, about a new job. With the general education level of the society rising, the future worker needs broad as well as experience-based education. Such an education offers him subsequent chances for rapid and successful specialization. With this in mind the learning experiences should be such that they become the basis upon which specialization can be built.

Our task in the secondary school then, is to provide students not only with entry skills for several careers but to orient the program to meet social and cultural goals. This means that the various courses or disciplines must be interrelated. Industrial Education provides a unique opportunity for the teacher to demonstrate these relationships and further, to capitalize on them by means of the motivation created through practical applications.

Thus the experiences to which students are exposed should provide them with realistic criteria for career guidance.

Industrial Education is a program consisting of courses that provide a continuum of experiences, starting with exploratory experiences and activities in the elementary and junior high school, expanding in the high school to the development of skills in career fields and culminating in on-the-job experience.

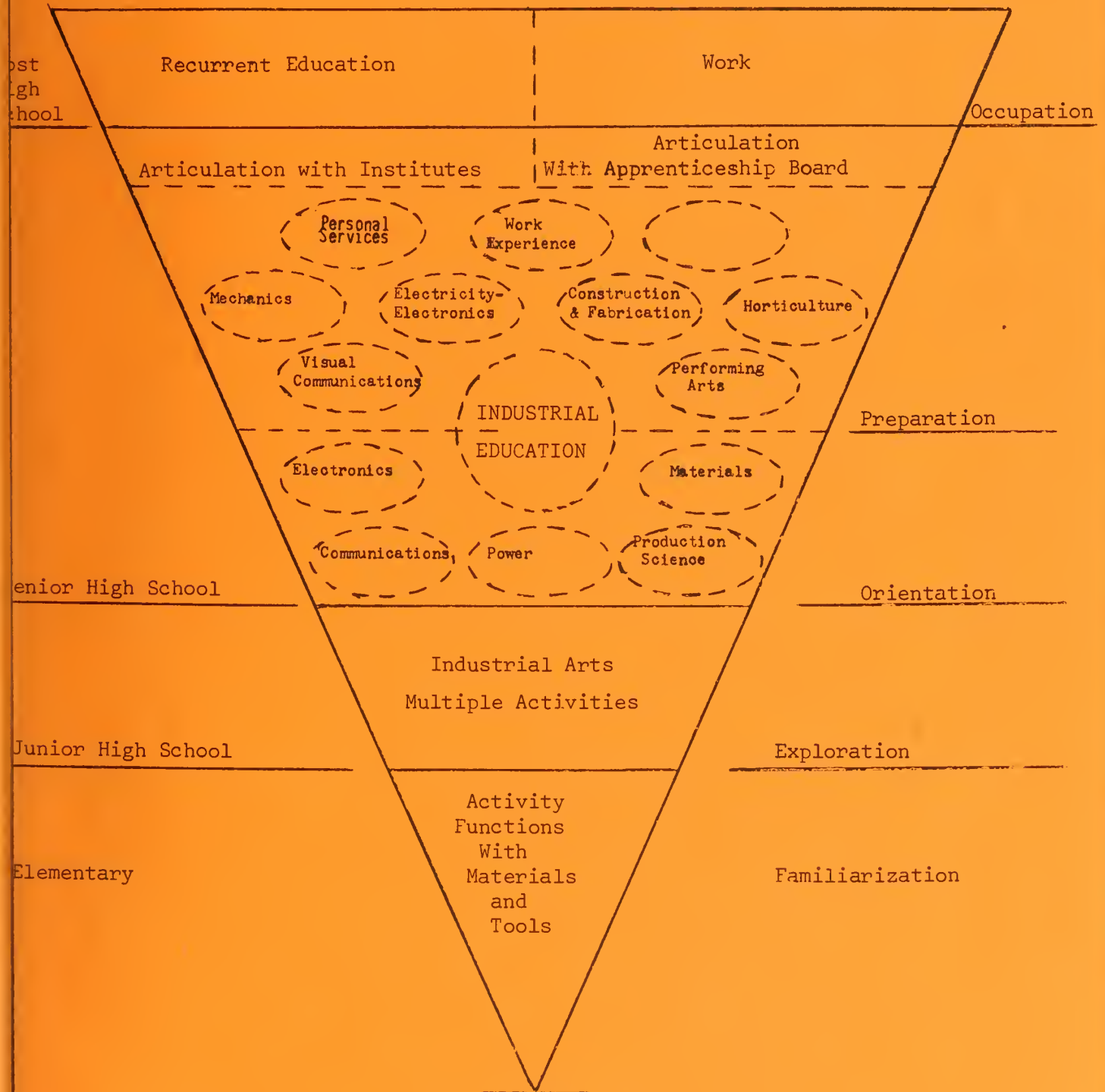
Industrial Arts, the exploratory phase of the continuum, provides the opportunity for the students to explore, reason, experiment and discover the reality of the technological society in which they live. The content of the program deals with industry, its organization, materials, processes, products, occupations, and the problems resulting from the impact of technology on society.

Following the exploratory phase, students may begin orientation studies in a career field. They may select modules of a more general nature in the Industrial Education 10, 20, 30 series or alternately take an introductory 12 course related directly to a career field. From here they advance to the more specific courses in the Industrial Education 22-32 program which prepare them for a career. The chart on page 3 illustrates the Industrial Education Program in conceptual form, showing the advancement of a student from the awareness or familiarization stage to exploration, orientation, preparation and finally, an occupation. These courses provide in-depth experiences in the development of skills in tool and machine operation, material processes, drawing and interpretation and a knowledge of the basic concepts related to the technologies. All the courses place emphasis on practical work and applied theory.

ALBERTA INDUSTRIAL EDUCATION PROGRAM

FOR

CAREER CHOICE AND DEVELOPMENT



I I I . O B J E C T I V E S

The objectives of Industrial Education 10, 20, 30 are as follows:

A. Personal Growth

To provide opportunities for the individual growth of the student through the development of acceptable personal and social values necessary in a productive society.

1. To provide a technical environment which motivates and stimulates individuals to discover their interests and develop personal and social responsibilities.
2. To assist in the development of positive attitudes toward safety.
3. To assist in the development of positive attitudes towards conservation and ecology.
4. To assist in the development of consumer values.

B. Career Exploration

To provide the student with experiences which will assist in making realistic career choices.

1. To provide students within a technical environment an opportunity to become acquainted with the skills, technical requirements, working conditions, responsibilities, opportunities and rewards in a variety of career fields.
2. To relate their own interests, abilities, likes, dislikes and values to several career fields.

C. Occupational Skills

To develop basic competencies, integrating cognitive and psychomotor skills to enter a family of occupations or post-secondary institutions for further education.

1. To provide exploratory experiences in the use of tools, equipment, and materials appropriate to various technologies prevalent in a productive society.
2. To develop an understanding of the interrelationships of various technologies.
3. To provide a technical environment for students to synthesize their accumulated knowledge in the solution of practical problems.
4. To assist the student to develop habits that will be conducive to the establishment of a safe environment.

I V . O R G A N I Z A T I O N

A. Program Organization

The Industrial Education 10, 20, 30 courses consist of 55 one-credit modules of content. The modules are categorized into career fields. Four career fields, i.e. Graphic Communications, Electricity-Electronics, Materials and Power Technology have the content of the modules outlined in this guide.

1. Regular Program

Courses may be made up by arranging combinations of modules drawn from the fifty-five available modules. These should be selected carefully to meet the needs of the students while at the same time providing appropriate consideration to factors such as suitability of facilities, equipment availability, supply costs and teacher experience or training. Each course may be taught for 4 or 5 credits (100 - 125 hours). The content for each module may range from 25 - 33 hours. Four modules of 33 hours each would provide the necessary time for a five-credit course. Four 25-hour modules would meet the time requirements for a four-credit course. The selection and sequence of modules is left to the teacher's discretion.

Procedurally, students will register in a course made up of four modules. The first four modules taken by a student would normally be registered as Industrial Education 10A. The next four modules would become 20A and the third set of four modules would be 30A. If some students wished to enrol in further Industrial Education courses, the next course would become 10B, with 20B and 30B following. It would be possible for students to arrange different sequences of courses if it is thought advisable. For example, one sequence might be 10A, 10B, 20A, 20B, 30A, 30B; another might be 10A, 20A, 30A, 10B, etc. Sequencing of courses will be left to local authorities. Examples of courses are as follows:

IE 10A (4-5 credits)	IE 20A (4-5 credits)	IE 30A (5 credits)
IE 10B (4-5 credits)	IE 30A (4-5 credits)	IE 30B (5 credits)

2. Special Consideration

In schools where vocational courses are taught, teachers have the option of using content from the "12" courses to make up the 65 hours required as prerequisite to the "22" courses. That is, in a composite high school where unit shops are available, students could be scheduled into two shops for a total of 125 hours, e.g. Auto and Welding. They could then advance to a "22" course in either or both of the two.

Students in the Industrial Education 10 program would be required to take two modules for 33 hours each, directly related to the "22" course for which they are earning the prerequisite. For example, a student would have entry to a "22" program by taking two closely related units, plus two others:

e.g. Basic Woods (33 hrs.)	66 hrs. permit entry to
Building Construction (33 hrs.)	Building Construction 22
Architectural Drawing (33 hrs.)	
Basic Wiring (33 hrs.)	
Approximate Total 132 hrs. = 1 Industrial Education course (5 credits)	

B. Guide Organization

The course guide is organized on the following pattern:

1. Career Field

All the modules are classified in four career fields:

Graphic Arts
Electricity-Electronics
Materials
Power.

2. Module Topic

Each module will be identified by a topic title.

3. Generalization

The first column describes the generalization or "big idea" that students should learn. A generalization expresses a relationship between two or more concepts. It is a statement of fact which is true in more than one situation.

4. Technical and Common Concepts divide the topic into categories of information that are reduced to single ideas. The technical concepts are specifically related to the topic. The common concepts used in the context of this guide are concepts that have relevance for all the topics.

5. Learning Tasks

The learning tasks column describes what activities students are expected to engage in.

6. Behavioural Objectives

These describe specific changes in student behaviour which result from the learning tasks performed.

An objective is a statement describing the intended outcome for the learner. Three kinds of instructional objectives are used:

- The cognitive objectives are those concerned with knowledge. They are characterized by such terms as "identify, differentiate, analyze".

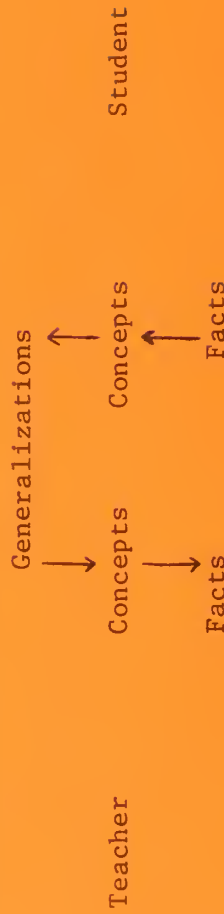
terms as "awareness" and "value" illustrate the affective objective. Such

- The psychomotor objectives are those concerned with skills and applied knowledge. They are expressed by the terms "develop skills in", and "extend skills".

The guide gives only a few sample behavioural objectives. It is the responsibility of the teacher to develop as many behavioural objectives as he/she can teach in the time available.

Facts are taken to be items of specific information, concepts are categories of information and generalizations express the relationship between concepts.

In planning a lesson, the teacher moves down this hierarchy, whereas in learning, the student begins with the facts and moves upward.



C. Facility Organization

The organization of the physical facilities is in part determined by the original plan. There are, however, adjustments that can be made in the layout by the teacher to accommodate his/her style of teaching. The number of students in a class affects the way the lab or shop is organized. While most of the shops in Alberta are designed for 16 to 20 students, a number of factors must be considered in the final assignment of class load. These factors include:

1. physical size of the shop or laboratory
2. type of student
3. amount of equipment
4. type of programming
5. type of course
6. training and experience of the teacher

Safety of the students and their opportunity to obtain teacher contact are important considerations when class loads are determined.

V. EVALUATION

Evaluation of student growth should be based on stated behavioural changes and specific criteria understood by the students. Allowance should be made for both self and teacher evaluation and, in some cases, peer evaluation. Evaluation should be based on the three domains of learning as defined by an Alberta committee of Industrial Education teachers. These categories are as follows:

1. Verbal and Written Communication
2. Personal Growth
3. Manipulative Skills.

The weighting given each of the three measures will depend on the nature of the behaviour being evaluated. For a more detailed treatment of evaluation see the Industrial Education Handbook (Alberta Education, 1976).

VI. CONTENT

The following are the titles of modules in the Industrial Education 10, 20, 30 course.

A. Electricity-Electronics (yellow package)

1. Electricity
2. Electronics
3. Power Supplies
4. Amplifiers
5. Audio
6. Servicing
7. Radio
8. Television
9. Logic Circuits
10. Computer
11. Electric Wiring
12. Design and Construction

B. Materials (green package)

1. General Woods
2. Building Construction (two units)
3. Cabinet (two units)
4. General Metals
5. Sheet Metal
6. Hot Metals (three units)
7. Plastics (two units)
8. Earths (two units)
9. Textiles
10. Foods

C. Power Technology (blue package)

1. Conventional Heat Engines
2. Small Engine Tune-Up and Trouble Shooting
3. Small Engine Overhaul
4. Automobile Care
5. Automobile Tune-Up
6. Mechanical Systems
7. Electro Mechanical Controls and Circuit Trouble Shooting
8. Electrical Systems
9. Non-Conventional Power Sources
10. Appliance Repairs and Trouble Shooting
11. Hydraulics and Fluidics
12. Pneumatics and Fluidics

D. Visual Communications (orange package)

1. Principles of Offset Lithography
2. Line Photography
3. Black and White Photography
4. Color Photography
5. Screened Photography
6. Layout and Design
7. Offset and Printing Production
8. Mechanical Drafting

9. Topographical Drafting
10. Architectural Drafting
11. Relief Printing
12. Print-Making Techniques

E. General

Three modules of a general nature also are available. These are:

1. Research module
2. Developmental module
3. Production Science module.

D. VISUAL COMMUNICATIONS

MODULES

Introduction	V.C. ii
Objectives	V.C. iv
Principles of Offset Lithography	V.C. 1
Line Photography	V.C. 2
Black and White Photography	V.C. 3
Color Photography	V.C. 4
Screened Photography	V.C. 5
Layout and Design	V.C. 6
Offset and Printing Production	V.C. 7
Mechanical Drafting	V.C. 8
Topographical Drafting	V.C. 9
Architectural Drafting	V.C. 10
Relief Printing	V.C. 11
Printmaking Techniques	V.C. 12
General	G 1

D. VISUAL COMMUNICATIONS

INTRODUCTION

Visual Communications includes a broad spectrum of activities ranging from sketching to printing an illustrated book. With communications playing such a dominant part in our lives it serves as a useful subject of study.

The twelve modules that comprise the program provide a broad scope of content which allows the students and teacher considerable choice in building the type of course best suited to the situation. The modules are exploratory by nature with an emphasis on the concept - generalization format.

The concepts given priority in visual communications are:

1. Image creation
2. Image generation
3. Image conversion
4. Reproduction
5. Finishing

In addition, the eight concepts common to the total program and incorporated in every module where appropriate are:

1. Consumer Awareness
 - quality
 - affective advertising
 - specifications
 - dollar value
 - buying procedures
 - availability
 - parts
 - serving

2. Environmental Implications

- time element (past, present, future)
- rates of consumption
- conservation
- alternatives
- pollution (land, air, water, noise)

3. Graphic Interpretation

- schematic
- symbols
- drawing interpretation
- visuals
- technical drawing and interpretation

4. Measurement

- British Engineering System (present English systems)
- System Internationale (SI)
- accuracy
- tools and instruments
- tolerances
- precision
- estimating
- approximating
- computations (including graphs, charts, interpolation)

5. Career Information

- benefits
- unionism
- local opportunities
- job mobility (vertical, horizontal, geographic)
- future
- retraining and upgrading
- jobs vs. careers

6. Societal Implications

- time (past, present, future)
- economic
- life patterns
- status
- values and mores

7. Technological Implications

- costs, benefits, consequences (C.B.C.)
- resource use and abuse
- tool development and use
- manufacturing
- servicing
- obsolescence
- design process
- planning

8. Safety

- unsafe conditions
- unsafe acts

The modules as listed may be selected in the order that the teacher finds most appealing. Two modules taught for a total of 65 hours will serve as a prerequisite for the appropriate 22 courses in Drafting, Graphic Arts, or Commercial Art.

I. OBJECTIVES

The objectives of the modules in Visual Communications are:

1. To provide an opportunity for students to learn about the materials and processes used in the graphics industry.

2. To give students practice in the approved methods and procedures required for drafting, printing, photography and duplicating processes.
3. To acquaint students with the opportunities in the field of graphic communications.

II. CONTENT SUMMARY

D. Visual Communications

1. Principles of Offset Lithography
2. Line Photography
3. Black and White Photography
4. Color Photography
5. Screened Photography
6. Layout and Design
7. Offset and Printing Production
8. Mechanical Drafting
9. Topographical Drafting
10. Architectural Drafting
11. Relief Printing
12. Printmaking Techniques

III. REFERENCES

The following books and materials are suitable as references. Those marked with an asterisk are particularly good.

1. Adams, Julian and Kenneth. PRESSTIME. Stratton - Prentice Hall of Canada
2. Bocus, Jr. William *ADVERTISING GRAPHICS. Collier - Macmillan Canada
Second Edition
3. Broekhuizen, Richard J. *GRAPHIC COMMUNICATIONS. Van Nostrand Reinhold Ltd.

4. Cogoli, John.
5. Eisenberg and Kafka.
6. Kodak.
7. Kodak.
8. Maurello, S. Ralph.
9. Muse, Ken.
10. Time-Life Books.

*PHOTO OFFSET FUNDAMENTALS. Van Nostrand Reinhold Ltd.
 SILKSCREEN PRINTING. McKnight & McKnight Publishing
 KODAK CURRICULUMS IN LINE AND HALFTONE PHOTOGRAPHY.
 KODAK DATA GUIDES -BW and COLOR.
 COMMERCIAL ART TECHNIQUES. Tudor Publishing Company
 *PHOTO ONE. Prentice Hall of Canada Ltd., Toronto
 TIME LIFE LIBRARY OF PHOTOGRAPHY.

IV. CONTENT

Generalization, concepts and behavioral objectives are outlined on the following pages. Teachers are expected to develop additional behavioral objectives and activities to supplement the identified content and maintain relevancy.

MODULE ONE

PRINCIPLES OF LITHOGRAPHY

INTRODUCTION

This module on lithography is designed to introduce the basic principles of the lithographic process including, simple layouts, image conversion through the use of electrostatic and direct image masters, the basic steps to offset press operation and elementary bindery processes.

I. OBJECTIVES

1. To help the student learn how to create simple layouts and then, using the principles of offset lithography, produce a number of reproductions as assigned.
2. To teach the student safe procedures when working in the laboratory.

II. REFERENCES

1. BOCKUS, H. WILLIAM. Advertising Graphics. (Second Edition) Collier Macmillan Canada. 1974.
2. BROEKHUIZEN, RICHARD J. Graphic Communications. Van Nostrand Reinhold.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
1. Image creation is a graphic process of translating ideas into mechanical visual symbols.	1. Image Creation a. Design	The student will: a. Know about - principles of design - consumer appeal - information dissemination.	The student will: a. Given instructional material and tools, utilize the elements and principles of design to create five simple visual ideas in the form of thumbnail sketches which are acceptable to the teacher.
	* <i>Safety</i>	b. Know safe procedures for operating equipment and handling material.	b. Given correct procedures and demonstrations, practice the following safety procedures: 1. Keep layout areas clean and orderly. 2. Store sharp instruments in their proper cases when not in use. 3. When working on the press not to wear loose clothing, and keep long hair tied back. 4. Stop press to free jammed paper. 5. Keep oily rags in a certified bin. 6. Know where the panic button is. 7. Use extreme caution when operating paper cutters and power stitchers.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
2. Image generation is the process of reconstructing conceptual ideas of visual symbols into a workable element from which a reproducible plate can be constructed.	2. Image Generation <ol style="list-style-type: none"> Point System Symbols Layout <p>* <i>Measurement</i></p>	<p>The student will:</p> <p>Know:</p> <ol style="list-style-type: none"> Point system of measurement <ul style="list-style-type: none"> point pica em, en agate <p>Know:</p> <ol style="list-style-type: none"> Symbol reproduction <ul style="list-style-type: none"> study on symbols adhesive symbols hand lettering clip out art work Simple layout techniques <ul style="list-style-type: none"> use of tools dummy layouts and roughs mechanical layouts 	<p>The student will:</p> <ol style="list-style-type: none"> Using a previously drawn thumbnail sketch, utilize the appropriate tools to accurately create a simple layout from dummy to mechanical form which will be clean and accurate to within one point.

* Common concepts in *script*. These are concepts common to most units.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
3. Image conversion is the process of transforming a comprehensive visual element into a reproducible element which will facilitate efficient reproduction and dissemination of that information.	3. Image Conversion <ol style="list-style-type: none"> Electrostatic Diffusion Transfer Mechanical Transfer 	<p>The student will:</p> <ol style="list-style-type: none"> Learn how to: <ul style="list-style-type: none"> - make electrostatic masters - use the diffusion transfer process - make direct image masters 	<p>The student will:</p> <ol style="list-style-type: none"> Given the equipment, correctly operate an electrostatic copier to produce masters which are toned to the proper degree to produce acceptable copies from the offset press. Produce direct image masters which are free of fingerprints and smudges and have dark black images which will accurately produce copies on the offset press.
4. Visual dissemination of reproducible elements must be carried out through the use of rapid, economic, accurate, reliable production processes in order to meet needs.	4. Reproduction <ol style="list-style-type: none"> Tools - Offset Press Materials Safety procedures 	<ol style="list-style-type: none"> Learn how to operate the offset press. Use materials: <ul style="list-style-type: none"> - fountain solution - inks - papers. Know safe procedures for operating press. Do press maintenance. 	<p>The student will:</p> <ol style="list-style-type: none"> Given a previously produced master and a demonstration of the safe use of the offset press, correctly operate and produce a number of good copies of the master to the satisfaction of the teacher.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
<p>5. Visual information is distributed in a convenient, orderly, durable form to meet the needs of the consumer.</p>	<p>5. Finishing</p> <p>a. Methods</p> <p>* <i>Environmental Implications</i></p> <p>* <i>Sociological Implications</i></p>	<p>The student will:</p> <p>a. Learn how to:</p> <ul style="list-style-type: none"> - collate - jog - cut - stitch - pad - fold - package 	<p>The student will:</p> <p>a. Given a fifty page document to finish, explore the basic finishing methods and use the most appropriate one to complete the assignment to the satisfaction of the teacher.</p> <p>b. Study the effect of the depletion of resources to produce paper.</p> <p>c. Discuss the effect of printed media on the public.</p>

* Common concepts in *script*. These are concepts common to most units.

MODULE TWO

LINE PHOTOGRAPHY

INTRODUCTION

This module on Line Photography is designed to introduce the operation of the vertical and horizontal process cameras, line photography and preparation of orthochromatic film to make metal masters on the platemaker.

It is suggested that the module "Principles of Lithography" be taken prior to or concurrent with this module as a knowledge of simple layout techniques and offset press operation is essential.

I. OBJECTIVES

The objective of this module is to help students learn the fundamentals of line photography, and develop skills in making metal plate masters.

II. REFERENCES

- COGOLI, JOHN E. Photo Offset Fundamentals. (Third Edition). Van Nostrand Reinhold, 1973.
- KODAK. Curriculum on Line Photography.
- KODAK. Slides and Tapes on Line Photography.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
1. Image creation is a graphic process of translating ideas into meaningful visual symbols.	1. Image Creation a. Design	a. Students learn how to make - thumbnail sketches - dummy layouts	The student will: a. Given the necessary resources and tools, create in 80 minutes, five thumbnail sketches which indicate both copy and line art work to the degree of perfection specified by the teacher.
2. Image generation is the process of reconstructing conceptual ideas of visual symbols into a workable element from which a reproducible element can be constructed.	2. Image Generation a. Point System b. Symbols c. Layout * <i>Safety</i>	a. Working drawings b. Do a comprehensive layout. Know safety procedures a. Clean, dust free atmosphere needed for line photography b. Floors must have rubber mats where liquids may be spilled	a. Given the necessary resources, tools and materials and utilizing the elements and principles of design, create in 160 minutes a clean, comprehensive layout consisting of line copy which can be reproduced on a process camera.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
		<p>c. Ventilation in classroom and plate-making area is essential</p> <p>d. Electrical outlets must be a safe distance from sinks.</p> <p>e. Rubber gloves and aprons are essential when handling chemicals.</p> <p>f. Handle chemicals with extreme caution.</p>	
3. Image conversion is the process of transforming a comprehensive visual element into a reproducible element which will facilitate efficient reproduction and dissemination of that information.	<p>3. Image Conversion:</p> <p>a. Photo Mechanical Reproduction.</p> <p>b. Light Sensitive Materials</p> <p>c. Chemistry</p>	<p>The student will learn:</p> <p>a. The operation of the process camera:</p> <ul style="list-style-type: none"> - parts - reduction and enlargement - lighting - calibration - posterization 	<p>The student will:</p> <p>a. Set up a process camera to specified data so that he can calibrate it to discover exact exposure times of line copy to develop film to a solid step #4 on a grey scale for 2 3/4 minutes at 20° Celsius.</p> <p>b. Properly set a process camera to specific conditions and produce five perfectly developed line negatives to a solid step #4 on a grey scale in one hour.</p>

* Common concepts in script. These are concepts common to most units.

TOPIC LINE PHOTOGRAPHY

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
		<p>b. Use sight sensitive materials:</p> <ul style="list-style-type: none">- orthochromatic film- P.M.T.S.- exposure- development- 3-m color key <p>c. To make chemical preparations:</p> <ul style="list-style-type: none">- mixtures- safety precautions <p>d. To make a flat:</p> <ul style="list-style-type: none">- stripping- opaquing <p>e. To make a plate:</p> <ul style="list-style-type: none">- exposure- development	<p>c. Correctly make plates of 10 different negatives to a tolerance of .001 and expose and develop plates of these negatives to a solid step #6 on the the grey scale.</p>

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
4. Dissemination of visual materials must be done through the use of rapid, accurate, economic and reliable production processes.	4. Reproduction a. Water & grease do not mix.	The student learns a. Offset operations - feed - impression - ink and aquamatic - delivery	The student will: a. Given a correctly developed metal master and paper cut to the precise size required for the job, set all the basic systems of the press according to pre-taught tolerances and operate the press in the correct sequence of events in order to run off a teacher-determined number of clean, legible copies in 30 minutes, with a registration to the original layout to 1 minute.
5. Visual information is distributed in a convenient orderly and durable form to meet the needs of the consumer.	5. Finishing: a. Numbering b. Collating c. Jogging d. Cutting e. Trimming f. Binding g. Padding h. Stitching i. Cerloxing j. Wire coil k. Drilling l. Folding m. Scoring n. Perforating o. Others as deemed useful	a. To do several finishing procedures.	a. Given 50 pages of material, perform the finishing process requested to complete the assignment to the satisfaction of the customer.

* Common concepts in *script*. These are concepts common to most units.

MODULE THREE

BLACK AND WHITE PHOTOGRAPHY

INTRODUCTION

This module on Black and White Photography will give students the opportunity to learn about different types of cameras, properties and development of light sensitive materials, and basic procedures in the operation of the enlarger. Emphasis will be placed on the quality of the finished print.

I. OBJECTIVES

The objectives of this module are:

1. To teach the students the correct use and operation of photographic equipment and materials.
2. To help students learn the fundamentals of "seeing" good design.
3. To help students develop the art of mounting photographs for display.

II. REFERENCES

MUSE, KEN., Photo One: Basic Photo Text. Prentice - Hall, 1973.
Time-Life Library on Photography. Time-Life Books.

KODAK. Black and White Guide.

KODAK. Pamphlets on Black and White Photography.

III. SAFETY

- Students must be provided with rubber gloves, tongs and rubber aprons due to the harsh qualities of photographic chemicals.
- Safety glasses are suggested to prevent chemicals being splashed in a student's eyes.
- Rubber mats should be placed around the sink areas of the darkroom to prevent slipping.
- Electrical outlets and switches must be positioned so they cannot be reached from sink areas.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
1. Image creation is a graphic process of translating ideas into meaningful visual symbols.	1. Image Creation <ul style="list-style-type: none"> a. The Art of Seeing * Graphic Interpretation 	a. The student learns the elements of photographic composition: <ul style="list-style-type: none"> - rule of thirds - balance - rhythm - harmony - proportion - simplicity - centre of interest - depth of field - pattern - texture - line. 	The student will: <ul style="list-style-type: none"> a. Given the resource material, observe, arrange and compose the subject matter according to basic elements of composition in order to record meaningful visual symbols on film.
	b. Images	b. Categories of images: <ul style="list-style-type: none"> - portraiture - photo journalism - candid - still life - micro/macro - copying - industrial/commercial - artistic. 	

* Common concepts in *script*. These are concepts common to most units.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
2. Image generation is the process of reconstructing a conceptual ideal or visual symbol into a workable element from which a reproducible element can be constructed.	2. Image Generation <ul style="list-style-type: none"> a. The Tools b. Light c. Lenses 	<ul style="list-style-type: none"> a. The student learns: <ul style="list-style-type: none"> - types of cameras - photographic equipment - camera operation. b. Types of lighting: <ul style="list-style-type: none"> - natural - artificial. c. Light sensitive materials. d. About Lenses: <ul style="list-style-type: none"> - properties - types 	<p>The student will:</p> <ul style="list-style-type: none"> a. Given the instruction, correctly operate and identify different types of photographic equipment available to him. b. Utilize a camera to record meaningful visual symbols on film. c. Given the tools and materials, choose the most appropriate lighting film, filters and lenses to capture a good picture.
	* <i>Safety</i>		<ul style="list-style-type: none"> a. Practice safety precautions as taught by the teacher.
	* Environmental Implications	<ul style="list-style-type: none"> a. About water pollution. 	<ul style="list-style-type: none"> a. Identify ways that chemicals can be safely discarded.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
3. Image conversion is the process of transforming a workable visual element into a reproducible element which will facilitate efficient reproduction and dissemination of visual information.	3. Image Conversion a. Chemistry * Technological Implications	a. The student learns to develop film: - mix chemicals - use developing tanks - load film - procedures - drying - storing.	The student will: a. Given the necessary instruction, tools and materials, correctly develop film according to the manufacturer's specifications. b. Through utilization of library resources, identify the advances made in image conversion and probable future developments.
4. Visual dissemination of reproducible elements must be carried out through the use of rapid, economic, accurate, reliable production methods in order to meet societal needs.	4. Reproduction a. Light Sensitive Materials	a. About types of photographic papers: - polycontrast - graded - bromides - resin coated - velox - paper finishes - safety lights.	a. Given the necessary tools and materials, correctly expose and develop one contrast print of his/her own negative and in consultation with the teacher select and print 8"x10" enlargements of the four best prints to a quality specified by the teacher.

* Common concepts in *script*. These are concepts common to most units.

TOPIC BLACK AND WHITE PHOTOGRAPHY

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
		<p>b. To know how to use:</p> <ul style="list-style-type: none"> - the contact printer - the enlarger. <p>c. Learn to develop procedures:</p> <ul style="list-style-type: none"> - mixing chemicals - developing sequence - solarization. 	<p>The student will:</p>
	Consumer Awareness		<p>a. Study several prints and make a critical analysis of their quality.</p>
5. Visual information is distributed in a convenient, orderly durable form to meet the needs of the consumer.	5. Finishing	<p>a. Techniques of:</p> <ul style="list-style-type: none"> - washing prints - drying ferro-typing mat finish R.C. papers. - retouching - mounting - framing - presentation 	<p>a. Finish his/her prints by using correct washing, drying, mounting, retouching and framing procedures so that they may be effectively displayed according to directions set out by the teacher.</p>

MODULE FOUR

COLOR PHOTOGRAPHY

INTRODUCTION

This module on Color Photography will introduce the student to the principles of color photography. The study will include an investigation of the types and properties of colored films and the techniques to be used in development of colored prints in the darkroom.

I. OBJECTIVES

The objectives of this module are:

1. To teach the student how to correctly use color film to produce artistic slides and prints.
2. To further the student's capacity to "see" subject matter.
3. To increase the student's expertise in the operation of various types of cameras and other photographic equipment.

II. REFERENCES

Time-Life Library on Photography. Time-Life Books.

KODAK. Color Data Guide.

WOOLLEY, A. E. Photography; A Practical and Creative Introduction. McGraw-Hall, 1974.

MCCOY, ROBERT A. Practical Photography. (Revised Edition). McKnight, 1972.

III. SAFETY

Extreme caution must be observed when handling color chemicals. They are very corrosive and, if splashed in a person's eyes, could cause blindness.

- Most photographic chemicals can be absorbed into the body where they may accumulate and surface as serious diseases in later life.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
2. Image generation is the process of re-structuring a conceptual idea of visual symbols into a workable element from which a reproducible element can be constructed.	2. Image Generation a. The Tool	The student learns: a. Types of cameras - operational features - photographic equipment - lights, flashes - backdrops.	The student will: a. Given the necessary information, correctly operate and identify different types of photographic equipment and utilize this tool to record meaningful visual symbols on color positive or negative film.
	b. Light	b. Types of lighting: - natural - artificial - properties of light	
	c. Light Sensitive Papers	c. Film - color - negative - positive - properties - types	
	d. Lenses	d. Lenses - types - properties	

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
		<p>The student learns</p> <p>e. Filters</p> <ul style="list-style-type: none"> - types - properties 	<p>The student will:</p>
3. Image conversion is the process of transforming a workable visual element into a reproducible element which will facilitate efficient reproduction and dissemination of visual information.	<p>3. Image Conversion</p> <p>a. Chemistry</p> <p>b. Tools</p>	<p>a. To develop color film:</p> <ul style="list-style-type: none"> - mixing chemicals - developing tanks - loading film - developing slides - developing color negatives - drying - storing. 	<p>a. Given the tools and materials, perform all operations necessary to develop the various types of color film to tolerances specified by the manufacturer.</p>
	<p>* Measurement</p> <p>* Technological Implications</p>	<p>a. About the units common to film work:</p> <p>a. To identify advantages and disadvantages of film technology as it relates to:</p>	<p>b. Study the inventions that have led to the current state of the art.</p>

* Common concepts in *script*. These are concepts common to most units.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
4. Visual dissemination	<p>4. Reproduction</p> <p>a. Light sensitive Materials</p> <p>b. Tools</p> <p>c. Chemistry</p>	<p>The student learns:</p> <p>a. About photographic papers:</p> <ul style="list-style-type: none"> - ekta color - agfacolor - unicolor - bessler - composition - finishes - safelights <p>b. About the contact printer.</p> <p>c. About the enlarger:</p> <ul style="list-style-type: none"> - exposure - filter drawer - color head - filtration - dodging - vynetting - spotting - special effects <p>d. Developing procedures:</p> <ul style="list-style-type: none"> - mixing chemicals - adjusting temperature - developing sequence - solarization. 	<p>The student will:</p> <p>a. Given the information, tools and materials, analyze, expose and develop a color contact print. Consult teacher and correctly print four 8"x10" enlargements of a good negative to natural looking colors, with pure whites, flesh tones and blacks.</p>

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
<p>5. Visual information is distributed in a convenient, orderly and durable form to meet the needs of the consumer.</p>	<p>5. Finishing</p> <p>a. Procedures</p>	<p>The student learns:</p> <p>a. Finishing procedure:</p> <ul style="list-style-type: none"> - drying color prints - retouching - using color on black and white - mounting - framing - titling slides - sound synchroniz-ation of slides - presentation 	<p>The student will:</p> <p>a. Given the information, produce a slide-tape production of at least 15 minutes duration, with titling and commentary synchronized to the slides to the satisfaction of the teacher.</p> <p>b. Given the information for development, present, in color, a photographic essay which conveys a central theme to the degree of expertise requested by the teacher.</p>

* Common concepts in *script*. These are concepts common to most units.

MODULE FIVE

SCREENED PHOTOGRAPHY

INTRODUCTION

This module on Screened Photography is designed to further a student's knowledge of process camera operation, stripping and platemaking. The module on Line Photography should precede this one.

I. OBJECTIVES

The objectives of this module are to help students learn:

1. The fundamentals of densitometry in order to produce screened photographs.
2. How to compute exposure times.
3. The principles of color separation.
4. Advanced flat preparation.

II. REFERENCES

- COGOLI, JOHN E. Photo Off-set Fundamentals. (Third Edition). Van Nostrand Reinhold, 1973.
- KODAK. Curriculum on Halftone Photography.
- KODAK. Pamphlet on Tri-mask Color Correction.

III. SAFETY

1. A clean, dust free atmosphere is essential for excellent screened negatives as well as for your health.
2. Floors under sink areas must have rubber mats.
3. Adequate ventilation in both darkroom and platemaking areas is a necessity.
4. Students must be protected from chemical contamination and splashes with rubber gloves, tongs, aprons and safety glasses.

Caution: The chemicals used in the process room can be absorbed into the body where they can be stored and accumulate for years, surfacing in later years as skin disorders and metal poisoning.

Avoid looking directly at carbon arcs as the intense light can cause permanent eye damage.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
1. Image creation is a graphic process of translating ideas into meaningful visual symbols.	1. Image Creation a. Design * Graphic Interpretation	<p>The student learns:</p> <p>a. To:</p> <ul style="list-style-type: none"> - review elements and principals of design - do layouts which include photo-graphs or screened effects and textures. - color overlays - screened tints - blocks for photo-graphs - art work with washer - color photographs. <p>b. To do thumbnail sketches.</p> <p>c. To do a dummy or rough.</p>	<p>The student will:</p> <p>a. Given the tools resources and materials and utilizing the elements and principles of design, create five thumbnail sketches or a dummy of a page for the school newspaper incorporating continuous tone and line elements, in one period of 80 minutes.</p>

* Common concepts in script. These are concepts common to most units.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
	* <i>Safety</i>	<p>d. To understand densitometry:</p> <ul style="list-style-type: none"> - reflection readings - transmission readings - filtration for color separation readings - exposure calculations. <p>e. To use contact screens:</p> <ul style="list-style-type: none"> - for halftones - for duotones - for color separations. <p>f. To work with light sensitive materials:</p> <ul style="list-style-type: none"> - orthochromatic - panchromatic - 3-m color key - exposure - development. 	<p>b. Given instruction, calculate densitometry readings of good black and white continuous tone copy and correctly compute both basic and flash exposure times from the graphic arts computer.</p> <p>c. Given exposure times of a pre-selected photograph, expose and develop a piece of orthochromatic film to produce a half-tone with a highlight dot of 90-95% and a shadow dot of 5-10%.</p>

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
2. Image generation is the process of reconstructing conceptual ideas of visual symbols into a workable element from which a reproducible element can be constructed.	2. Image Generation <ul style="list-style-type: none"> a. Point System b. Metric System c. Symbols d. Layout <p>* Measurement</p>	<ul style="list-style-type: none"> a. To make some working drawings. b. To do type composition. c. To do a comprehensive layout. 	<p>The student will:</p> <ul style="list-style-type: none"> a. Given the resources, tools and materials create in 4 hours a comprehensive layout of the best thumbnail or dummy completed above which will contain both line and continuous tone copy to the degree of craftsmanship specified by the teacher.
3. Image conversion is the process of transforming a comprehensive visual element into a reproducible element which will facilitate reproduction and dissemination of that information.	3. Image Conversion <ul style="list-style-type: none"> a. Photo-mechanical Reproduction. * Graphic Interpretation b. Densitometry c. Light Sensitive Materials d. Chemistry. 	<p>The student learns:</p> <ul style="list-style-type: none"> a. To operate the process camera b. The functions of: <ul style="list-style-type: none"> - parts - lighting - scales - calibration of halftone - filtration for color separation. 	<p>The student will:</p> <ul style="list-style-type: none"> a. Given instruction, do the following in 80 minutes: <ul style="list-style-type: none"> - set up and operate the process camera - develop a piece of screened, exposed orthochromatic film of a pre-calibrated grey scale - calibrate the process camera and the exposure computer. b. Given instruction, calculate densitometry readings of good black and white continuous tone copy and correctly compute both basic and flash exposure times from the graphic arts computer.

* Common concepts in *script*. These are concepts common to most units.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
	* <i>Safety</i>	<p>c. To understand densitometry:</p> <ul style="list-style-type: none"> - reflection readings - transmission readings - filtration for color separation readings - exposure calculations. <p>d. The use of contact screens:</p> <ul style="list-style-type: none"> - for halftones - for duotones - for color separations. <p>e. To work with Light Sensitive materials:</p> <ul style="list-style-type: none"> - orthochromatic - panchromatic - 3-M color key - exposure - development. 	<p>c. Given exposure times of a pre-selected photograph, expose and develop a piece of orthochromatic film to produce a halftone with a highlight dot of 90 - 95% and a shadow dot of 5 - 10%.</p>

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
		f. Prepare chemical preparations: - mixtures - safety precautions.	
	* Environmental Concerns.		d. Discuss the environmental concerns related to dumping chemicals into the sewer.
	* Technological Implications		e. Discuss the effect of new inventions on the standard of living.
	e. Processing	g. To produce halftones. h. To produce duotones. i. To produce a series of color separation negatives.	f. Given adequate instruction, calibrate correct exposure times of a black and white photograph and then expose and develop a set of good duotone negatives. g. Given adequate instruction, orally explain the process of separating a color photograph or slide into its primary colors.
	f. Flat Preparation g. Image Transfer	j. To do stripping and opaquing. k. To do registration for duotones, color overlays and color separation.	h. Prepare flats with registration within .01 mm of both line and screened negatives. i. Make metal masters of prepared flats with registration to within .01 mm and developed to a solid step #6 on a grey scale.

* Common concepts in *script*. These are concepts common to most units.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
4. Dissemination of visual reproducible elements must be carried out through the use of rapid, economic, accurate and reliable production processes.	4. Reproduction Water and grease do not mix.	The student learns: a. To operate offset press b. How to register masters c. To use correct inks and paper d. Safe work habits.	The student will: a. Given the tools and materials, produce a number of copies acceptable to the teacher.
5. Visual information is distributed in a convenient, orderly durable form to meet the needs of the consumer.	5. Finishing methods a. Numbering b. Collating c. Jogging d. Cutting e. Trimming f. Binding g. Padding h. Stitching i. Cerloxing j. Wire coil k. Drilling l. Folding	a. Finishing methods suitable to the particular product.	a. Given 50 pages to finish for a specific purpose as defined by the teacher, select the appropriate finishing method and complete the assignment to the satisfaction of the teacher.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
	m. Scoring n. Perforating o. Packaging p. Boxing q. Preserving r. Laminating s. Spraying t. Embossing 6. Consumer Awareness.	a. What to look for in a graphics product.	

* Common concepts in *script*. These are concepts common to most units.

MODULE SIX

LAYOUT AND DESIGN

INTRODUCTION

This module on Layout and Design will enhance the student's knowledge and skill in layout and commercial art techniques. Primary emphasis will be on the planning and construction of various layouts using a variety of tools and materials.

I. OBJECTIVES

The objectives of this module are to:

1. Help the students learn how to prepare various types of layouts, incorporating the principles of good design.
2. Develop skills in utilizing tools and materials effectively.
3. Provide the students with adequate knowledge so that he/she is able to select the most economical method of image transfer for a particular layout on the offset press.

II. REFERENCES

- BOCKUS, H. WILLIAM, JR. Advertising Graphics. Collier Macmillan, 1969.
- MAURELLO, S. RALPH. Commercial Art Techniques. Tudor.

III. SAFETY

1. Chemicals must only be used in areas with adequate ventilation.
2. Students must be provided with protective clothing and rubber gloves and tongs when working with chemicals.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
1. Image creation is a graphic process of translating ideas into meaningful visual symbols	1. Image Creation * Graphic Interpretation a. Commercial Art Techniques.	Students will know: a. Methods used in basic drawing: - experimental - constructive - expressive. b. Drawing composition and design: - elements of design - line - direction - shape - size - value - texture - color. c. Principles of design: - rhythm - harmony - proportion - rule of thirds.	The student will: a. Create spontaneously imaginative free forms and composition involving non-objective and digestive material in a variety of techniques and media without preliminary sketching. b. Draw accurately in line the four basic forms; cone, cube, cylinder and sphere. c. Draw accurately in tone the four basic forms in a way that describes the volume of these forms, his/her understanding of the medium used and the principles of light and shadow. d. Given various stimuli, interpret a variety of ideas or concepts in terms of design or pictorial presentation. e. Create designs using one or more design elements to demonstrate an understanding of these elements.

* Common concepts in script. These are concepts common to most units.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
		<p>d. Color theory:</p> <ul style="list-style-type: none"> - value scale - colorwheel. <p>e. Psychological effects of color on a consumer.</p> <p>f. Use of symbols:</p> <ul style="list-style-type: none"> - lettering - type styles and sizes - proof reading. <p>g. Identity of tools:</p> <ul style="list-style-type: none"> - drawing instruments - ruling pens - cutting knives - T squares - set square - line gauge - air brush - pens 	<p>f. Utilize a number of the elements of design to create an aesthetically sound composition.</p> <p>g. Given the information, paint a value scale and a color wheel consisting of primary, secondary and tertiary hues and various chromas of these.</p> <p>h. Letter accurately a basic gothic alphabet with a "B" style speedball pen. Do the same with a "C" style pen, using standards set out in a lettering guide.</p> <p>i. Given a demonstration of tool use, correctly use them in the layout area.</p>

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
		<ul style="list-style-type: none"> - pencils, reproducing and non-reproducing waxes - composing machine - scissors - dusting brushes. <p>h. How to identify and use printing and art materials:</p> <ul style="list-style-type: none"> - glues - adhesive and photographic headings - inks and washes - paints - border tapes - adhesive tints and textures - rubylith - mylar sheets - snopaque - show card board. 	<p>j. Given a demonstration, correctly use art and printing materials.</p>

* Common concepts in *script*. These are concepts common to most units.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
	* Graphic Interpretation	<p>i. How to plan a layout:</p> <ul style="list-style-type: none"> - the five Basic Layout styles - features of the layout <ul style="list-style-type: none"> - attention - interest - desire - action <p>j. Types of layout and where appropriate for:</p> <ul style="list-style-type: none"> - ads, newspaper - package design - customer jobs - corporate symbols. 	<p>k. Given information or a demonstration on illustration, draw five simple sketches which convey a specified theme to standards acceptable to the teacher.</p> <p>l. Given a demonstration of the five basic layout rules and a review of the principles of good design, create five simple visual ideas for a single advertisement in the form of thumbnail sketches.</p> <p>m. Given the tools and materials, measure five specified distances to 100% accuracy on a specified scale.</p>
	* Societal Implications	k. The ethics of advertising:	

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
2. Image generation is the process of reconstructing conceptual ideas of visual symbols into a workable element from which a reproducible element can be constructed.	<p>* Measurement</p> <p>2. Image Generation</p> <p>a. The Layout.</p> <p>* Measurement</p>	<ul style="list-style-type: none"> - code of ethics - advertising psychology - copyright. <p>1. The printer's system of measurement:</p> <ul style="list-style-type: none"> - pica - em, en - agate. 	<p>The student will:</p> <p>a. Utilizing his best thumbnail sketch, make a comprehensive layout incorporating working drawings and/or photographs and type composition with all type, borders and illustrations straight and within one point measurement of pre-calculated sizes.</p>

* Common concepts in *script*. These are concepts common to most units.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
3. Image conversion is the process of transforming a comprehensive visual element into a reproducible element which will facilitate efficient reproduction and dissemination of that information.	3. Image Conversion <ul style="list-style-type: none"> a. Electrostatic b. Diffusion Transfer c. Photo Mechanical 	<p>The student should know:</p> <ul style="list-style-type: none"> a. How eletro-static masters are prepared. b. The theory of the diffusion transfer process. c. The theory of photo mechanical reproduction. 	<p>The student will:</p> <ul style="list-style-type: none"> a. Given a camera-ready comprehensive layout, reproduce in 80 minutes its image in plate form to a tolerance of .001 of the size specified by the teacher.
4. Visual dissemination of reproducible elements must be carried out through the use of rapid, economic, accurate and reliable production processes in order to meet societal demands.	4. Reproduction <ul style="list-style-type: none"> a. Equipment b. Materials c. Safety. 	<ul style="list-style-type: none"> a. How to use the off-set press safely. 	<ul style="list-style-type: none"> a. Given instruction and a paper or metal master, correctly operate and produce a determined number of good copies of the master to a standard of quality acceptable to the teacher.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
<p>5. Visual information is distributed in a convenient orderly durable form to meet the needs of the consumer.</p>	<p>5. Finishing.</p>	<p>a. Methods of finishing.</p>	<p>The student will:</p> <p>a. Given a teacher-determined number of pages, select the method most suited to the project and bind them to a standard of quality acceptable to the teacher.</p>

* Common concepts in *script*. These are concepts common to most units.

MODULE SEVEN

OFFSET PRINTING PRODUCTION

INTRODUCTION

This module is designed to introduce students to the processes involved in production of materials by means of offset printing. Students plan production in terms of a simple systems analysis, establishing time factors and deadlines for each step. Prime factors or evaluation are quality control, deadlines, wastage and consumer acceptance.

N.B. The modules, Principles of Lithography and Line Photography, are prerequisites to this module.

I. OBJECTIVES

1. To introduce the student to the complexities of a production line.
2. To introduce the student to the docket system of orderly production and to the cost factors involved in production.
3. To instill in the student a feeling for craftsmanship and pride in the finished product.

II. REFERENCES

- ADAMS, JULIAN and KENNETH STRATTAN. Press Time. (Second Edition). Prentice - Hall, 1969.
- COGOLI, JOHN E. Photo Off-set Fundamentals. (Third Edition). Van Nostrand Reinhold, 1973.
- HAULNSTEIN, A. DEAN and STEVEN A. BACHMEYER. World of Communications. McKnight, 1974.

III. SAFETY

As well as safety procedures stressed in previous units, the student and instructor must be aware of the possible hazards which may occur due to the imposition of strict deadlines. There is a tendency for students to rush and become careless, thereby causing needless accidents. Good planning and close supervision can avoid this.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
1. Image creation is a graphic process of translating ideas into meaningful visual symbols.	1. Image Creation <ol style="list-style-type: none"> Design Creative and News Writing. 	<p>The student will:</p> <ol style="list-style-type: none"> Learn about: <ul style="list-style-type: none"> - editorials - news writing - english for printers (spelling, hyphenation) - how to "see" - dummies. 	<p>The student will be able to:</p> <ol style="list-style-type: none"> Write two 500-word articles suitable for publication in a chosen assignment, using good English and good form according to the type of article and having no more than two spelling errors.
2. A meaningful and efficient system must be established for efficient use of personnel and machinery and for distribution of goods.	2. Production Techniques <ol style="list-style-type: none"> Systems Analysis Critical Path Docket System Hierarchy of Management Quality Control 	<p>Learn how to:</p> <ol style="list-style-type: none"> Set up a systems analysis chart, indicating the critical path. Establish a docket system. Organize work stations. Assign titles and jobs. Establish deadlines. Work out cost factors. 	<ol style="list-style-type: none"> Chart a systems analysis of the offset process to establish the most efficient means of completing the chosen assignment, indicating the critical path.

* Common concepts in *script*. These are concepts common to most units.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
3. Image generation is the process of reconstructing conceptual ideas of visual symbols into a workable element from which a reproducible element can be constructed.	3. Image Generation <ul style="list-style-type: none"> a. Layout b. Symbols c. Point System d. Composition 	<p>The student will:</p> <ul style="list-style-type: none"> a. Learn one of the following layouts: <ul style="list-style-type: none"> - newspaper - magazine - a section of a yearbook - booklet 	<p>The student will be able to:</p> <ul style="list-style-type: none"> a. Lay out pages in the instructed form, according to the type of assignment; incorporating the elements and principles of design and the correct use of tools and materials to the satisfaction of the instructor. The student will be evaluated in terms of deadlines, craftsmanship and personal growth factors.
4. Image conversion is the process of transforming a comprehensive visual element into a reproducible element which will facilitate efficient reproduction and dissemination of that information.	4. Image Conversion <ul style="list-style-type: none"> a. Photography b. Photo Mechanical Reproduction c. Line Photography d. Halftone Photography e. Flat Preparation f. Image Transfer 	<ul style="list-style-type: none"> a. Review of: <ul style="list-style-type: none"> - process camera operation, line and halftone - flat preparation (stripping, opaquing) - platemaking 	<ul style="list-style-type: none"> a. Make good line shots and halftones and prepare flats in order to make good metal plates, developed to a solid #6 on the grey scale and with registration to within .01 mm. b. Produce excellent photographs, free of spots, stains and dust in the time allotted by and to the satisfaction of the instructor.

MODULE EIGHT

MECHANICAL DRAFTING

INTRODUCTION

This module in drafting is designed to introduce the basic drawing concepts. Students will learn to draw objects using the various projection methods. It is important that students learn the correct use of the instruments.

I. OBJECTIVES

1. To provide a general introduction to the drafting field.
2. Acquaint students with basic drafting tools, materials and procedures.
3. Develop an appreciation for the precise nature of communicating by the use of technical drawing.

II. REFERENCES

1. Canadian Standards Association. MECHANICAL DRAWING STANDARDS. B 78 - 1.
2. Davis & Skinner. NEW BASIC DRAFTING.
3. Giesecke, Frederick et al. TECHNICAL DRAWING. Mecmillan. 1967. 5th ed.
4. Jensen & Mason. DRAFTING FUNDAMENTALS. McGraw. 3rd ed.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
1. Drafting is a means of communicating ideas precisely and accurately using a symbolic language.	1. Image Creation a. Drawing freehand -lines -letters -symbols	The student learns a. the purpose of drafting, lettering and symbols. b. to use a pencil for freehand lettering and sketching.	The student will: a. Determine why this language is necessary in modern productive society and who uses it. b. Practice freehand lettering and freehand sketching.
2. A knowledge of the use and handling of drafting equipment is basic to the writing of the drafting language.	2. Image Generation a. Identification and care of drafting instruments. b. Use of instruments	a. to identify, adjust, clean and take care of basic drafting equipment. b. to use drafting tools to draw simple geometric shapes employing -horizontal lines -vertical lines -inclined lines -arcs -circles	a. Given a basic set of drawing instruments identify, clean and adjust equipment. b. Given a basic set of drawing instruments, perform the following tasks: -draw horizontal lines using a T square -draw vertical lines using a T square and triangles -draw parallel lines using a combination of triangles, T square and triangles -draw arcs and circles using compasses.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
3. Knowledge of shape description is basic to reading and writing the language of drafting	c. Drawing Media	The student learns c. to identify various drafting media.	The student will: c. identify and list the following use of the drafting media: -drafting paper (i.c.bond paper, ledger paper, etc.) -tracing paper -tracing lines -tracing film
	* <i>Measurement</i> d. Line language e. Line standards -uniform density -accepted line thickness.	d. about the use of scales. e. draw uniform, standardized lines.	d. practice laying out objects to scale. e. describe physical conditions represented by lines on drawings. (i.e. edge view of a plane, intersection of planes, reversal element of a circle).
			f. describe and correctly use object lines, hidden lines, centre lines as given in the C.S.A. Mechanical Engineering Drawing Standards. g. demonstrate understanding of line standards by producing a simple one-view drawing upon which all lines are uniformly dense (black) and where line thickness is in accordance with generally accepted standards.

* Common concepts in *script*. These are concepts common to most units.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
	f. Sketching skills	The student learns how to	The student will:
	g. Object representation	f. sketch lines as used in drafting	h. Given pencil and paper, sketch horizontal, vertical, inclined lines, arcs and circles, thick and thin lines.
	i) Perspective projecting	The student will learn about:	i. Given multiview orthographic, axonometric, oblique and perspective drawings, identify each type by name.
	ii) Orthographic multiview projection.	g. various systems of object representation, classify drawings into appropriate categories	j. Given partially completed multiview drawings, complete the drawings. k. Given pictorial drawings, produce multiview drawings.
	iii) Isometric Drawing	h. principles of orthographic projection including C.S.A. layout of views.	l. Produce orthographic multiview drawings and/or sketches from models or objects.
	iv) Oblique Drawing	i. the principles of isometric drawing.	m. Given an orthographic multiview drawing, convert it into an isometric drawing or sketch.
	Concise legible notes are an essential feature of technical drawings.		n. Given an orthographic multiview drawing, convert it into an oblique drawing (Cabinet and Cavalier)
3. Occupational.		a. search out occupational information.	Given suitable equipment and material, freehand letter in upper case, single stroke gothic letters, a minimum of two 8½" x 11" lettering sheets. a. Use the C.C.D.O. to prepare a report on one occupation of personal interest.

MODULE NINE

TOPOGRAPHICAL DRAFTING

INTRODUCTION

This module introduces students to the elements of topographical drawing.

I. OBJECTIVE

The objective of this module is to provide opportunities and experiences that will enable students to develop basic knowledge, understanding and appreciation of topographical drafting processes.

II. REFERENCES

Sloane, R. C. & Montz, J. M. ELEMENTS OF TOPOGRAPHIC DRAWING. McGraw-Hill, 1943. 2nd ed.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
1. Data gathering techniques are important to preparing accurate maps.	1. Data gathering. a. Surveying	The student will learn: a. how to read maps and identify features. b. about the surveyor's tools: -transit -steel tape -range pole -level rod.	The student will: a. given a map and instructions, list the features shown. b. given a transit, range pole and level rod: i. set up a transit ii. give angular readings from the horizontal iii. give horizontal readings between points on the ground. iv. find the elevation of a series of points in reference to a bench mark.
2. Modern society depends on accurate interpretation and translation of geographic data into permanent scaled symbolic records of the features.	2. Interpretation of data. a. Field notes. b. Photogrammetry.	a. how to record survey data. b. how to read air photos.	a. given complete survey field notes prepared by teacher, make a scale drawing of the survey following the notes. b. given air photos and transparent film, use the photos to transfer topographical information to a map grid of the same area.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
3. Knowledge of shape description is basic to reading and writing the language of drafting.	3. Image Generation.	<p>The student will learn:</p> <p>a. to identify common map symbols.</p> <p>b. about:</p> <ul style="list-style-type: none"> -line shading -hachures -contour lines -layer tinting -the universal Transverse Mercator Method of projection. 	<p>The student will:</p> <p>a. given the proper data and equipment, produce a simple map by following these guidelines:</p> <ul style="list-style-type: none"> 1. pencil a grid 2. pencil topographic features 3. pencil or ink all lettering 4. pencil or ink physical and cultural features 5. pencil or ink grid lines.
4. A productive society must prepare its population to make realistic vocational choices.	4. Occupation.	<p>a. how to search out information on careers in drafting.</p>	<p>a. use the Canadian Classification and Dictionary of Occupations to report on one occupation of personal interest.</p>

* Common concepts in *script*. These are concepts common to most units.



MODULE TEN

ARCHITECTURAL DRAFTING

INTRODUCTION

This module introduces students to the elements of architectural drawing.

I. OBJECTIVE

The objective of this module is to provide opportunities and experiences that will enable students to develop basic knowledge, understanding and appreciation of architectural drafting processes and materials.

II. REFERENCES

1. French, T. E. and Vierck, C. J. MANUAL OF ENGINEERING DRAWING FOR STUDENTS AND DRAFTSMAN. McGraw-Hill. 1972. 10th ed.
2. Gieseke, F. E. et. al. TECHNICAL DRAWING. Collier-McMillan. 1967. 5th ed.
3. Hepler, D.E. & Wallach, P.I. ARCHITECTURE DRAFTING AND DESIGN. McGraw-Hill. 1971.
4. Jensen, C. H. ENGINEERING DRAWING AND DESIGN. McGraw-Hill. 1968.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
Image creation is a graphic process of translating ideas into meaningful visual symbols.	1. Image Creation. * <i>Graphic Interpretation.</i>	The student will learn: a. how to draw objects best represented by i. Orthographic projection: -multiview -axonometric (isometric) ii. Oblique drawing -cabinet -cavalier iii. Sectional Drawing.	The student will: a. given the problem of communicating technical information about a building, select the most suitable type of drawing and draw the views conforming to standard drafting practice. b. do some freehand sketches of furniture in cabinet drawing. c. given a floor plan of a house and the elevation, draw a sectional view. d. dimension a simple plan.
Image generation is the process of re-constructing conceptual ideas of visual symbols into a workable element from which a reproducible element can be constructed.	2. Image Generation.	a. how to draw and dimension objects including notes, shop directions, specifications, etc.	a. given a sketch of a building, correctly draw the necessary views required and completely dimension the drawing following the rules of selection, placement and drawing of dimensions, as well as including necessary notes, etc.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
3. Image conversion is the process of transforming a comprehensive visual element into a reproducible element which will facilitate efficient reproduction and dissemination of that information.	3. Image Conversion.	The student will learn:	The student will: a. complete a working drawing which is reproducible.
4. Society must provide students with experience upon which to base their career selection.	4. Occupations.	a. how to use the CCOD	a. use CCOD to identify careers in architectural drawing and list out the educational requirements.

* Common concepts in *script*. These are concepts common to most units.

MODULE ELEVEN

RELIEF PRINTING

INTRODUCTION

This module is designed to introduce the basic principles of relief printing, including measurement, symbols, tools and materials. Because relief printing equipment is very costly, much of the introduction to equipment and processes is theoretical. Class assignments are limited to such projects as hand-setting type, operation of small platen presses and sign presses and the flexography process of making rubber stamps. There is no attempt in setting up this course to simulate the state of the art in industry or in a vocational graphic arts course.

I. OBJECTIVES

To give the student a basic understanding of the relief printing process as it compares to other forms of printing.

II. REFERENCES

POLK, RALPH W. Basic Printing.

III. SAFETY

- Do not wear loose clothing.
- Extreme caution and concentration is required when operating the older type of platen presses.
- Do not permanently remove guards on moving parts on any equipment in the lab.
- Asbestos gloves must be worn when operating the rubber stamp press.
- Never put your hands under the blade of a paper cutter or the ejector of a power stapler for any reason.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
1. Image creation is a graphic process of translating ideas into meaningful visual symbols.	1. Image Creation <ul style="list-style-type: none"> a. Printer's System of Measurement b. Metric System c. English for Printers d. Symbols 	The student learns about: <ul style="list-style-type: none"> a. Lines gauge - point system. b. Metric conversion. c. Type <ul style="list-style-type: none"> - features styles. d. Spacing materials and furniture. 	The student will: <ul style="list-style-type: none"> a. Given the necessary tools and resources, create five simple visual ideas into the form of thumbnail sketches which are suitable for construction by the relief printing method and are acceptable to the teacher. Evaluation should be in terms of craftsmanship, originality and initiative.
2. Image generation is the process of reconstructing conceptual ideas of visual symbols into a workable element from which a reproducible element can be constructed.	2. Image Generation <ul style="list-style-type: none"> a. Composition and Make-Up b. Layout Techniques <ul style="list-style-type: none"> - Hot and Cold Metal - Strike On - Paste-Up for Conversion to Photo-Engraving. 	The student will learn about: <ul style="list-style-type: none"> a. California Job Case (Optional. Only to be taught if more modern means is not available.) <ul style="list-style-type: none"> - Ludlow - linotype - photo composition - strike on equipment - justification - reading type - large type, wooden and metal - locking up a form. 	<ul style="list-style-type: none"> a. Given the necessary information and appropriate equipment, construct three jobs either with hand-set or hot metal type, with a maximum of one error per assignment.

* Common concepts in script. These are concepts common to most units.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
	<ul style="list-style-type: none"> * Technological Aspects * Societal Implications 	<ul style="list-style-type: none"> a. Advances made by industry. a. The effect of printed media. 	<p>The student will be able to:</p> <ul style="list-style-type: none"> a. Given the necessary information, correctly make two rubber stamps and two etched metal plates with no more than 1 mm error in mold thickness or depth of etch.
3. Image conversion is the process of transforming a comprehensive visual element into a reproducible element which will facilitate efficient reproduction and dissemination of that information.	<ul style="list-style-type: none"> 3. Image Conversion <ul style="list-style-type: none"> a. Conversion Processes <ul style="list-style-type: none"> - Flexography - Photo Engraving 	<p>The student will learn about:</p> <ul style="list-style-type: none"> a. Rubber stamp press b. Making a mold c. Process camera d. Etching process. 	
	<ul style="list-style-type: none"> * <i>Safety</i> - See introductory section of this modular outline. 		

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
4. Visual dissemination of reproducible elements must be carried out through the use of rapid, economical, accurate and reliable production processes in order to meet societal needs.	4. Reproduction - Press Operation	The student will learn about: a. Platen Press b. Flatbed presses (sign press). c. Rubber stamp press (molding the stamp). d. Inks e. Papers f. Press clean-up	The student will be able to: a. Given the necessary introduction and a demonstration of safety procedures, correctly operate all presses in a lab and produce fifty printed copies and three rubber stamps, to the satisfaction of the instructor.
5. Visual information is distributed in a convenient, orderly, durable form to meet the needs of the consumer.	5. Finishing - Numbering - Collating - Jogging - Cutting - Trimming - Book binding	The student will learn about: a. Finishing methods b. Suiting the finishing method to the job.	The student will be able to: a. Given fifty pages to finish for the teacher, select and use the most appropriate finishing method to complete this assignment to the satisfaction of the teacher. Evaluation should be in terms of craftsmanship and personal growth.

* Common concepts in *script*. These are concepts common to most units.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
	<ul style="list-style-type: none"> - Padding - Stitching - Cerloxing - Wire Coil - Drilling - Folding - Scoring - Perforating - Packaging - Wrapping - Boxing - Preserving - Laminating - Spraying - Embossing - Mounting <p>* Consumer Awareness</p>	<p>a. Demand for quality and fair pricing.</p>	

MODULE TWELVE

PRINTMAKING TECHNIQUES

INTRODUCTION

This module is designed to introduce the student to the printmaking process, including both hand cut and photographic methods, and to the construction of equipment. A knowledge of both basic and line photography is essential before entering this unit.

I. OBJECTIVES

The objectives of this course are:

1. To teach the student various silkscreen methods.
2. To expand the student's knowledge about the wide use of silkscreen printing in industry.

II. REFERENCES

EISENBERG and KAFKA. Silkscreen Printing. Van Nostrand Reinhold, 1957.
SHERWIN-WILLIAMS LTD. (Free materials and literature is available).

III. SAFETY

Some silkscreen processes use highly combustible and corrosive chemicals which will cause severe burns as well as damage to the lungs and mental faculties. It is therefore recommended that only the new water and bleach soluble materials be used in the school. These are very safe and do the same quality of job.

Silkscreen areas must be well ventilated. Rubber gloves and a plastic apron are an absolute necessity when working with varsol-soluble inks and when cleaning photo-emulsion from screens with chlorine bleach.

IV. CAREER INFORMATION

Career opportunities exist in textile plants, sign companies, department stores and private businesses. Silkscreening is used in a large number of businesses to produce signs and display material to label bottles and cans, to dye patterned materials, and to pattern wall paper, T-shirt designs, posters and large signs. It is also well established as a fine arts medium.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
1. Image creation is a graphic process of translating ideas into meaningful visual symbols.	1. Image Creation a. Design * Graphic Interpretation	The student will learn about: a. Elements and principles of design b. Planning a project - thumbnail sketches - art work	The student will: a. Given the necessary tools and materials, create five thumbnail sketches of designs suitable for silkscreen production.
2. Image generation is the process of reconstructing conceptual ideas of visual symbols into a workable element from which a reproducible element can be constructed.	2. Image Generation a. Layout	a. Working drawings for hand cut stencils b. Comprehensive layouts for photo-silkscreens c. T-shirt designs d. Posters e. Abstract art.	a. Upon consultation with the teacher, produce from his best thumbnail sketch either a working drawing for a hand cut stencil or a comprehensive layout for a photo-silkscreen, to the degree of perfection specified by the instructor.

* Common concepts in *script*. These are concepts common to most units.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
3. Image conversion is the process of transforming a comprehensive visual element into a reproducible element which will facilitate efficient reproduction and dissemination of that information.	<p>3. Image Conversion</p> <ul style="list-style-type: none"> a. Stencils b. Photo-Mechanical Conversion c. Image Transfer <p>* <i>Safety</i> - See introductory section of this module.</p>	<p>The student will learn about:</p> <ul style="list-style-type: none"> a. Paper stencils b. Lacquer stencils (water soluble) c. Photo emulsion (chlorine bleach soluble) d. Tusche and glue methods e. Operation of process camera and enlarger f. Copying with 35 mm camera and enlarging on orthochromatic film on the enlarger g. Operation of the platemaker. 	<p>The student will:</p> <ul style="list-style-type: none"> a. Given the necessary instruction, tools and materials, make a good stencil by a prescribed method, to the satisfaction of the instructor.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
4. Visual dissemination of reproducible elements must be carried out through the use of rapid, economic, accurate, reliable production processes in order to meet societal needs.	4. Reproduction a. Tools	The student will learn about: a. Making a frame b. Stretching a silk c. Coating a silk d. Adhering a stencil-hand-photographic e. Blocking f. Making colors g. Registration h. Papers i. Printing shirts j. Drying.	The student will be able to a. Correctly set up and operate silkscreen equipment. b. Produce fifty good copies for a poster or ten designs on T-shirts within one class period to the satisfaction of the teacher.

* Common concepts in *script*. These are concepts common to most units.

GENERALIZATIONS	TECHNICAL AND *COMMON CONCEPTS	LEARNING TASKS	BEHAVIOURAL OBJECTIVES
5. Visual information is distributed in a convenient, orderly, durable form to meet the needs of the consumer.	5. Finishing a. Finishing Producers	The student will learn about: a. Removing a stencil b. Cleaning a silk and work area c. Trimming d. Mounting e. Fixing dyes f. Packaging. Demand for products, quality.	The student will be able to: a. Clean his area and equipment. b. Finish his product in a manner acceptable to both the teacher and the consumer
	* Consumer Awareness		

E. GENERAL

1. Research Module

The purpose of the Research Module is to allow individual students to engage in an in-depth study of a problem related to any of the career fields.

The time period is 25 hours and qualifies as a regular module.

The module provides for individualizing the program to allow for special interests of students. The student should prepare a proposal of his research and have it approved by the teacher. The proposal should contain:

- a) A statement of the problem.
- b) The procedure to be followed in the research of the problem.
- c) A list of the materials and lab facilities to be used.
- d) A time line of activities.

2. Developmental Module

The purpose of the Developmental Module is to provide a 25-hour block of time for the teacher to try out new content with his class. The content of the proposal or project should be discussed with the Associate Director of Curriculum for Industrial Education.

3. Production Service Module

The purpose of Production Service is to provide for a class project in setting up a company to produce a product or service.

The Production Science 30 course will provide an outline from which content may be selected to develop a 25-hour module. The Production Science 30 is a full 4-5 credit course so the teacher must be selective in choosing the content for a 25-hour or one-credit module.





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